



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Am

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,337	02/07/2002	Gordon Douglas Hutchison	GB920000084US1	6380

7590 03/25/2005
IBM Corp, IP Law
11400 Burnett Road, Zip 4054
Austin, TX 78758

EXAMINER

VO, LILIAN

ART UNIT PAPER NUMBER

2195

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/068,337

Applicant(s)

HUTCHISON ET AL.

Examiner

Lilian Vo

Art Unit

2127

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1 – 36 are pending.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy of the priority documents has been received in 2/7/02.

Claim Rejections - 35 USC § 101

3. Claims 1 – 36 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.
4. **Claims 1 – 12** are directed to method steps, which can be practiced mentally in conjunction with pen and paper, therefore they are directed to non-statutory subject matter. Specifically, as claimed, it is uncertain what performs each of the claimed method steps. Moreover, each of the claimed steps, inter alia, providing, examining, returning, determining, can be practiced mentally in conjunctions with pen and paper. The claimed steps do not define a machine or computer implemented process [see MPEP 2106]. Therefore, the claimed invention is directed to non-statutory subject matter. (The examiner suggests applicant to change “method” to “computer implemented method” in the preamble to overcome the outstanding 35 U.S.C. 101 rejection).

Art Unit: 2127

5. **Claims 13 – 24** are the intent of the execution of the system and not tangibly embodied in a manner so as to be executable as the only hardware is in an intended use statement.

6. **Claims 24 – 36** including intangible medium such as signal transmitted over the network (specification page 13, lines 15 – 18), which is incapable of being touched or perceived absent the tangible medium through which they are conveyed.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. **Claims 1 - 36** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. The following terms lack antecedent basis:

- a. “the identity”, in **claims 1, 7, 8, 13, 19, 20, 25, 31 and 32.**
- b. “the computer system”, in **claims 1 and 13.**
- c. “the detection”, in **claims 5, 17 and 29.**
- d. “said detection”, in **claims 6, 18 and 30.**
- e. “the program”, in **claims 6 and 30.**

Art Unit: 2127

B. The examiner is not sure whether the following term is referring to the same ones as introduced above or not? Clarification is required.

a. “a deadlock”, in **claims 1 and 25**.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1 – 4, 8 – 16, 20 – 28 and 32 – 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haddon et al. (US 6,622,155, hereinafter Haddon) in view of Dubourreau et al. (US 5,590,335, hereinafter Duborreau).

11. Regarding **claim 1**, Haddon discloses a method of operating a computing system supporting multiple processes, said method including the steps of:

providing a set monitors for controlling access to resources of the computer system, whereby a process has to enter a monitor in order to access a corresponding resource, and has to join an entry queue for the monitor if the resource is currently owned by another process (abstract and fig. 3, col. 8, lines 36 - 60);

responsive to a predetermined condition, examining processes queued on monitors to determine whether there is a deadlock situation (col. 5, lines 15 – 18, lines 46 – 59).

Haddon discloses that as logical threads (each has series of local threads) span machines, they must be uniquely identifiable across all machines in the network and behave reasonably when one of the constitute local threads ceases to exists due to, for example, a machine halt, especially when the logical thread is holding a lock on a monitor. It is essential that the monitor lock be released in a timely manner to avoid locking out other access requests to the resource, which the monitor controls (col. 5, lines 46 – 59).

Haddon did not clearly disclose the step of detecting such a deadlock. Nevertheless, the concept of detecting a deadlock to shared resources among processes are well known and also discloses by Dubourreau in which if such a deadlock is found, returning information about the identity of the processes and monitors involved in the deadlock (col. 6, lines 39 – 55). It would have been obvious for one of an ordinary skill in the art, at the time the invention was made to incorporate Dubourreau's teaching together with Haddon so that if deadlock occurs, it can be detected and handled to avoid the system crash.

12. Regarding **claim 2**, as modified Haddon discloses the predetermined condition comprises a process requesting to enter a monitor that is currently owned by another process (Haddon: col. 8, lines 46 – 59).

13. Regarding **claim 3**, as modified Haddon discloses the processes involved in the examining step are determined iteratively based on those processes queued on the requested monitor, and those processes queued on monitors owned by processes already determined to be involved in said examining step (Haddon: abstract, col. 8, lines 36 – 62).

Art Unit: 2127

14. Regarding **claim 4**, as modified Haddon discloses the system maintains a global table of contended monitors, a monitor being contended if there is a process in its entry queue, the table identifying processes which own or are queued on contended monitors (Haddon: col. 4, lines 9 – 22 and 30 – 37).

15. Regarding **claim 8**, as modified Haddon discloses avoiding of the deadlock (Haddon) and the how to handle deadlock if found (Dubourreau) but did not clearly disclose the step of returning exception if deadlock is found. However the concept of throwing an exception is considered well known and also discloses in Haddon where an exception is throw when object is not available (col. 9, lines 13 – 40). It would have been obvious to implement modified Haddon's system with throwing deadlock exception for analyzing to provide enhancement to system performance.

16. **Claims 9 and 10** are rejected on the same ground as stated in claims 2 and 8 above.

17. Regarding **claim 11**, as modified Haddon discloses the examination of processes queued on monitors to determine whether there is a deadlock situation includes processes having conditional wait on a monitor (Dubourreau: abstract, col. 6, lines 39 – 55).

18. Regarding **claim 12**, as modified Haddon discloses the examination of processes queued on monitors includes monitors on one or more remote machine (Haddon: abstract, col. 4, lines 9 – 21, 30 – 37).

Art Unit: 2127

19. **Claims 13 – 16, 20 - 28 and 32 - 36** are rejected on the same ground as stated in claims 1 – 4 and 8 - 12 above.

20. Claims 5, 6, 17, 18, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haddon et al. (US 6,622,155) in view of Dubourreau et al. (US 5,590,335), as applied to claims 1, 13 and 25 above, and further in view of Fujita (US 5,845,117).

21. Regarding **claim 5**, as modified Haddon did not clearly disclose the detection that a set of processes have not progressed over a certain interval. Nevertheless, Fujita discloses a watchdog timer which issuing a resource gaining request again for the task in the waiting relation for a given period of time (fig. 2, col. 7, lines 1 - 21, col. 12, lines 26 - 41). It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to incorporate Fujita's teaching with modified Haddon so that deadlock that is actually caused as a result of delay or loss of communication between system is possible to detect (Fujita: col. 12, lines 42 – 53).

22. Regarding **claim 6**, as modified Haddon discloses the detection is performed by a process that periodically examines the program counter of other processes on the system (Haddon: col. 5, lines 46 – 59).

23. **Claims 17, 18, 29 and 30** are rejected on the same ground as stated in claims 5 and 6 above.

Art Unit: 2127

24. Claims 7, 19 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haddon et al. (US 6,622,155) in view of Dubourreau et al. (US 5,590,335), as applied to claims 1, 13 and 25 above, in view of Fujita (US 5,845,117) and further in view of Kikuchi (US Pat. Pub. Application 2001/0049714).

25. Regarding **claim 7**, as modified Haddon did not clearly disclose an error is returned if a deadlock situation occurs. Nevertheless, Kikuchi teaches this limitation in fig. 2: s17 and page 3, paragraph 40, 44 and 45). It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to incorporate Kikuchi's teaching with modified Haddon so that any deadlock occurs in the system can be analyzed from the returned error to enhance system performance.

26. **Claims 19 and 31** are rejected on the same ground as stated in claim 7 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilian Vo whose telephone number is 571-272-3774. The examiner can normally be reached on Monday - Thursday, 7:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100.

Art Unit: 2127

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lilian Vo
Examiner
Art Unit 2127

lv
March 18, 2005


MENG-AL T. AN
SUPERVISOR, PATENT EXAMINER
TECHNOLOGY CENTER 2100